The Child with Musculoskeletal and Neuromuscular Dysfunction
Overview of A&P

- Osteoblasts - immature bone cells that replace cartilage cells as bone grows
- Child’s bones are less dense and more porous
- Ossification progresses outwardly from the diaphysis
- Essential for adequate calcium intake to prevent osteoporosis
Club Foot

- Foot twisted and fixed in abnormal position
  - Plantar flexion
  - Dorsiflexion
  - Varus deviation
  - Valgus deviation
- May be unilateral or bilateral; bone deformity and soft tissue contracture
- Etiology unknown
  - Familial tendency
  - Intrauterine position
  - NM or vascular problems
Treatment and Nursing Care

- Manipulation/serial casting
- Parents perform ROM
- Denis Browne Splints or corrective shoes for 1 yr
- Surgery- 4-12 months, casted 6-12 weeks

- Neurovascular checks
- Elevate on pillow
- Monitor for welling/drainage
- Pain Management
- Distraction/Age appropriate play
Osteogenesis Imperfecta (OI)

- Pathologic fractures- “brittle bone disease”
- Bones are fragile that fractures result from trauma but also from pressure or birth
- Autosomal dominant inheritance
- Normal Ca and Ph, abnormal pre collagen type I
- Often misdiagnosed as child abuse
Clinical Manifestations/Assessment

- Blue sclera/cataracts
- Transparent skin
- Weak muscles, short stature, fractures
- Hearing problems
- H/O fractures delayed growth
- Discolored teeth
- Normal or above average intelligence
Nursing Care

- Mobility: gentle turning, passive ROM, skin care
- Light weight leg braces, splinting, PT
- Meds
  - Calcitonin- aids bone healing
  - Biphosphonates to increase bone mass
  - Growth hormone to stimulate growth
Developmental Dysplasia of the Hip

- Head and acetabulum improperly aligned
- Occurs 1-2/1000 births; unilateral
- Females more than males

Etiology
- Family history
- Maternal hormones-estrogen causing laxity of the hip joint and capsule
- Breech, twins, large infant
- Sociocultural
Pathophysiology

- **Preluxation**
  - Delay in acetabular development
  - Femoral head in the acetabulum

- **Subluxation**
  - Incomplete dislocation
  - Femoral head in contact with acetabulum
  - Stretched capsule and ligament

- **Dislocation**
  - Femoral head loses contact with acetabulum
  - Displaced posteriorly and superiorly over the rim
  - Uncorrected subluxation of dislocation can lead to permanent disability
Clinical Assessment Findings

- **Infants**
  - Ortolani’s sign
  - Barlow’s sign
  - Asymmetric gluteal folds
  - Limited abduction of affected hip

- **Older Children**
  - Limp/toe walking
  - Delayed walking
  - Trendelenburg’s sign
  - Telescoping of affected leg
  - Lordosis and waddling gait with bilateral dislocation
Pavlik harness/Spica Cast
Family Education

Pavlik Harness
- Proper application and assessment of skin
- Wear t-shirt and socks worn under brace to prevent skin irritation
- Diaper placed under straps
- Do not remove for diaper change only bath

Modification of car seat, positioning for nursing and eating

Ensure adequate stimulation with toys and activities to continue development
Scoliosis

- Lateral curvature of the spine
- Females 11-14yrs
Assessment/Diagnosis

Scoliosis

- Visible curvature of spine
- Rip hump when child bends forward
- Asymmetric rib cage
- Uneven shoulder or pelvic heights
- Leg length discrepancy
Milwaukee brace
Patient Teaching

- Brace worn 23 hours/day
- Brace off to shower, bathe swim
- Wear t shirt under brace to protect skin
- Exercises (pelvic tilt and lateral strengthening)

- Spinal Fusion – Post op
  - Turn deep breathing cough
  - Pain medication
  - ROM
Other Common Muscular Skeletal Problems in Childhood

- Duchenne Muscular Dystrophy
- JRA
- Spina bifida
- Cerebral Palsy
- Osteomyelitis
- Fractures
  - Greenstick
  - Spiral
  - Open/closed
  - Complete
    (transverse)
- Slipped Capitol Femoral Epiphysis